Semiconductor Two-Terminal Device
With Negative Resistance

77783
SOV/109-5-2-16/25

diode with a negative resistance on the forward branch
of the volt-ampere characteristic. They used a silver
wire with a small donor admixture. The negative
resistance appeared after an electric forming with strong
currents. The authors reproduced a similar device
and discovered a negative resistance on both the
forward and return branch of the volt-ampere characteristic,
the more stable portion being on the return branch. It
is probable that an n-p-n structure developed under the
contact. Flat and asymmetrical two-electrode systems
of n-p-n and p-n-p types were investigated by U.S.
scientists S. L. Miller and J. Ebers (see U.S. refs).
There were, however, no comprehensive analyses made
of phenomena leading to the development of negative
resistance. The authors experimented with two-electrode
devices of the p-n-p type constructed by melting indium
into electronic germanium. The results of those experi-
ments are given in this paper. The possible mechanics
of achieving negative resistance are discussed,
approximated analytical expressions of the volt-ampere
characteristic are developed, and some data on the

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performance of these devices in radiotechnical circuits
are given. (1) Possible physical processes leading to
establishing of a negative resistance in two-electrode
semiconductor devices. The mathematical expression for
negative resistance in two-electrode semiconductor
devices is:

$$R^{(-)} = \frac{-\partial U}{\partial I} \simeq \frac{-\Delta U}{\Delta I}. \qquad (1)$$

where the minus sign before ΔU indicates an increase
of conductivity of the device with increase of the cur-
rent, and a considerable increase of the number of cur-
rent carriers in the p-n junctions due to impact
ionization is possible only if combined with a regenera-
tive process stimulated by a positive feedback in the
device. Thus, two conductivity raising sources are
required, working together in such a way that the increase
of conductivity by one causes a corresponding increase
by the other. As the second source, can be used: (1)
thermal generation of charge carriers as used in

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DGTse4 to DGTse12 point contact germanium diodes:
these devices have a strong inertial nonlinearity, and
parameters strongly dependent on temperature, thus
rendering them useless in the high-frequency range;
(2) a second p-n junction, with an injection of current
carriers increasing with the current increase, the
device using the effect of light, the Siener effect,
the shift current of the external source imperfectness
of the p-n junction at which the reverse voltage is
applied. These conditions can be established in the
semiconductor structure as shown on Fig. 1. The initial
current increase in such a system is achieved by the
use of multiplication at the polarity shown in Fig. 1,
the junction Π_1 (further called emitter) is shifted
forward, while the junction Π_2 (further called col-
lector) is shifted in the reverse direction. At a
voltage lower than the critical U_{cr}, at which impact
ionization begins, a current of the order of the col-
lector saturation flows through the p-n-p structure.

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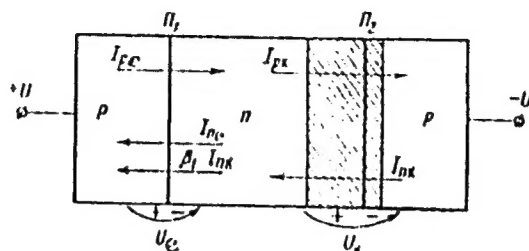

Fig. 1.   p-n-p Type structure.

Electrons entering from the collector charge the base
negatively, lowering its potential, thus increasing
the hole current through the emitter. The ratio of
the increase of the full current to the increase of
the electron current at the collector junction equals:

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$$\frac{dI}{dI_{nn}} = \alpha'' = \frac{1 - a_n \beta_1}{1 - a_0}.$$

(3)

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where $a_0 = \gamma \beta_2$; $\beta_2 = \dfrac{\partial I_{pk}}{\partial I_{pe}}$ is trans-

mission coefficient of holes from the emitter to the

collector; $\gamma = \dfrac{I_{pe}}{I_{pe} + I_{ne}}$ is emitter effectiveness;

β_1 is coefficient of electron transmission from
collector to emitter (here, $a_0 < 1$ and $\beta_1 < 1$
and, therefore, $a_e^* > 1$); I_{pe}, I_{ne}, I_{pk}, I_{nk}
are hole and electron components of emitter and
collector currents. The avalanchelike increase of
current may lead to a flooding of the collector
junction, which causes there a lowering of potential,
and subsequent appearance of a negative resistance
section of the volt-ampere characteristic. (2)
Development of an expression for the volt-ampere
characteristic of the p-n-p structure in a two-term-
inal device. Ignoring the part of the electron current
Card 6 /16   reaching the collector junction, in comparison with

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other currents the following two equations are written:

$$I_9 = I_{pe} + I_{ne} + M_n\beta_1 I_{nk},\qquad (4)$$

$$I_k = M_p I_{pk} + M_n I_{nk}. \qquad (5)$$

where M_n is electron multiplication coefficient; M_p, hole multiplication coefficient. Coefficient β_1 is determined from the equality of the recombination currents of holes and electrons in the base:

$$(1 - \beta_2) I_{pe} = (1 - \beta_1) I_{nk}.$$

Considering that $I = I_e = I_k$ from (4) and (5) follows:

$$I = \frac{I_{nk} M_n (1 - \alpha_0 M_p) + \alpha_0 M_p (1 - \beta_2) I_{pe}}{1 - \alpha_0 M_p}. \qquad (6)$$

The currents in Eq. (6) may be found by solving the equations of continuity and diffusions, and after substituting these values (6) can be transformed into (7), where the currents are expressed with reference to a unity area of the junction:

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$$J = -\frac{1}{1 - \alpha_0 M(U)} \frac{1 - e^{aU}}{e^{aU} - k} \{z_0 M(U) J_{ps} D(k+1) - M(U)[1 - z_0 M(U)] J_{ns}\},$$

(7)

where J_{ps}, J_{ns} are hole and electronic components of
the saturation current.

$$a = \frac{q}{kT}; \quad k = \frac{J_{ps}\,\mathrm{cth}\,\frac{l}{L_p}\,(1 - \alpha_0 M)}{J_{ns} + J_{ps}\,\frac{1}{sh\,\frac{l}{L_p}}\,(1 - \alpha_0 M)}; \quad D = \frac{\mathrm{ch}\,\frac{l}{L_p} - 1}{\mathrm{sh}\,\frac{l}{L_p}};$$

l is base width; L_p, diffusion length of holes. It
is assumed that $U = U_e + U_k$, $M = M_p = M_n$. This
equation is valid only for the beginning of the section
of negative resistance, but it permits evaluation of
the further behaviour of the p-n-p structure. Equation
(7) shows that the shape of the volt-ampere character-
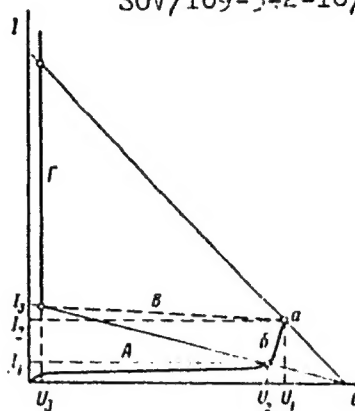istic is basically determined by the term $1/1 - \alpha_0 M$.

Card 8 /16   Figure 2 shows an idealized volt-ampere characteristic.

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Fig. 2. Idealized
volt-ampere charac-
teristic of a p-n-p
type structure.

For $U \ll U_B$ (where U_B = breakdown voltage) when $M = 1$,
the product $a_o M < 1$, and the current flowing
through the structure is of the order of the
collector saturation current (area A on Fig. 2).

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For $U \to U_B$, $a_o M \to 1$, and the current tends to

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become infinitely large and is limited only by the
external resistance R (area B on Fig. 2); the current
is $I = (E - U_2)R^{-1}$. With further voltage increase
$\alpha_0 M = 1$, and the collector is flooded; and at
point a of Fig. 2 the transition to a low-resistance
stage occurs at:

$$U_1 = U_B \sqrt{1 - \alpha_0} \qquad (8)$$

which can be determined from condition $\alpha_0 M = 1$.
Area C is unstable ($M = 1$, $\alpha_0 = 1$). For area D
$M = 1$, $\alpha_0 \simeq 1$, and the current is independent of
the voltage, being determined by the external
resistance. (3) Experiment. For the experiments
germanium plates with indium and admixtures melted
into the plates in a hydrogen atmosphere were used
in the p-n-p structures; the resistivity of the plate

Card 10/16   was 0.8-0.5 ohm/cm.

Semiconductor·Two-Terminal Device
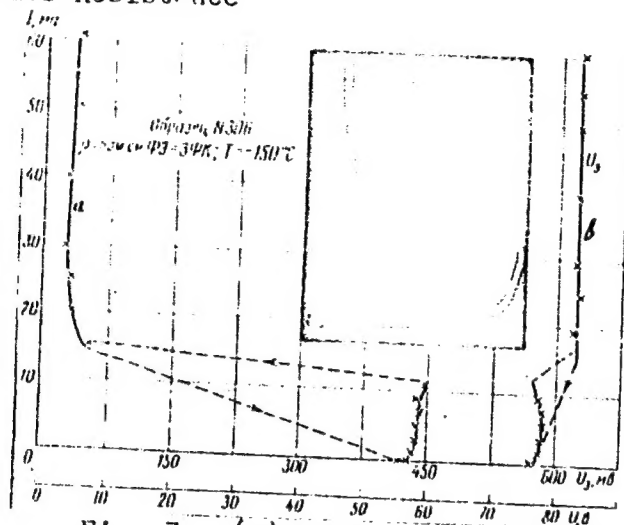With Negative Resistance

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Fig. 3. (a) Experimental characteristic of p-n-p
structure and its oscillogram; (b) relation of emitter
voltage to current.

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The characteristic measurements were made at low temperatures. Curve b on Fig. 3 illustrates the relation of emitter voltage to current, showing a coincidence of jumping voltage changes on the collector and emitter. The theoretical results for U_1 from (8) agree with experimental data within the investigated range of ρ. Figure 4 shows the calculation diagram for the relation of transfer voltage U_1 to ρ. Figure 5 shows experimental graphs for the relation of $\frac{U_1}{U_B}$ and α_0 to resistivity ρ. Experiments proved a very pronounced dependence of α_0 on the current when the emitter area was 2-3 times as large as the collector area, which was of the order of 0.01 cm^2. Illumination of the collector decreases U_1. The time of transition to the state

Card 12/16   of low resistance was 0.1 to 0.35 μsec.

Semiconductor Two-Terminal Device
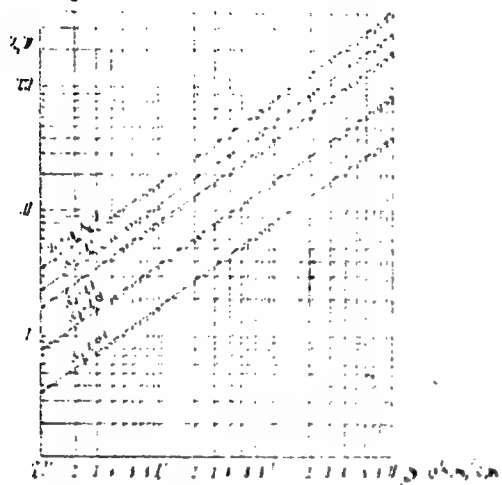With Negative Resistance

Fig. 4. Relation of trans-
fer voltage U_1 to ρ for
various·values of α_0 per
Eq. (8).

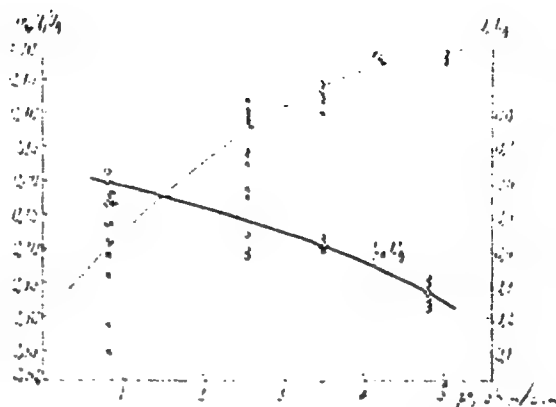Fig. 5. Relation of relative
voltage U_1/U_0 and values of α_0
to ρ.   Card 15/16

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With Negative Resistance   80V, 100-5-2-1o/26

(4) Application of the device. The active non-
linearity of the volt-ampere characteristic makes the
two-terminal device useful in many changeover and
generator circuits.

Fig. 8. Oscillator
circuit with a negative
resistance device.
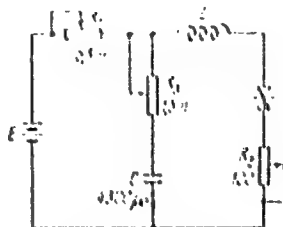
This circuit generates saw-tooth oscillation at R_x =
=0. Resistance changes the oscillation frequency
without change of the time constant of the capacitor
charging circuit. The low inductivity L is used to
improve the linearity of the output voltage.
Oscillograms did show that the nonlinearity of the
Card 14/16   saw tooth does not exceed 1% for a low inductance.

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Maximum frequency obtained was 1,750 kc. Exclusion of
R_2 and R_3 and selection of the working point in the
middle of the negative resistance section gives a
sinusoidal wave oscillator. A circuit with one
equilibrium state is achieved by a selection of a proper
R_1 and source voltage E resulting in location of the
working point in the D area of the volt-ampere character-
istic, and introducing, after elimination of R_2, positive

trigger pulses into the created gap. The minimum ampli-
tude of the trigger pulses is 1-5 v. A circuit with two
equilibrium states can be constructed eliminating R_3,

C, and L, and supplying trigger pulses of different
polarity through a small capacitor. R_1 and E must be so

selected that the straight load line crosses the volt-
ampere characteristic in three points. These two-terminal
devices can be used with advantage in schemes where
point contact devices are usually used. B. M. Vul,

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Semiconductor Two-Terminal Device   77783
With Negative Resistance   SOV/109-5-2-16/26

                   N. A. Penin, and N A. Belova helped. There are 10
                   figures; and 15 references, 7 Soviet, 7 U.S., 1 French.
                   The 5 most recent U.S. references are: J. L. Moll
                   et al., Proc. I. R. E. 1956, 44, 9, 1174; W. Shockley,
                   Tele-Tech., 1957, 76, 8, 58; I. M. Macintosh, Proc.
                   I. R. E., 1958, 46, 6, 1229; W. Read, Bell Systems
                   Techn. J., 1958, 37, 2, 401; S. L. Miller, Phys. Rev.,
                   1955, 99, 4, 1234.
PRESENTED: At the 2nd Scientific Technical Conference for application
                   of transistors in the construction of devices, October
                   1958, in Moscow, USSR
SUBMITTED: May 30, 1959

Card 16/16

24075
S/106/61/000/002/004/006
A055/A133

9,4300

AUTHORS: Berg, M. A. and Garyainov, S. A.

TITLE: Semiconductor devices with negative resistance

PERIODICAL: Elektrosvyaz', no. 2, 1961, 31 - 41

TEXT: After a few words on the practical application of semiconductor-devices with negative resistance, and some general information on the breakdown of semiconductors into several groups or classes and on their respective characteristics, the authors proceed to a comprehensive analysis of the process resulting in the appearance of a negative-resistance portion in the current-voltage characteristics of: 1) a p-n-p type three-electrode device having a current-voltage characteristic of the second class, and 2) a tunnel-type diode having a current-voltage characteristic of the first class. In their analysis the authors emphasize the fact that the existence of at least two sources of conductivity variation is typical for any negative-resistance device. In the second part of their article, the authors compare the current-voltage characteristics of the first and second classes, and state the observed differences. This comparative analysis shows that negative-resistance semiconductor-devices having either a first-class

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S/106/61/000/002/004/006
A055/A133

Semiconductor devices with negative resistance

or a second-class current-voltage characteristic can be used as amplifiers. An appropriate choice of the load and of the position of the quiescent point within the negative-resistance portion allows to prevent self-excitation in the absence of any signal. Considering the optimum operating value of the negative resistance, the authors state that this value is obtained when maximum negative power is released by the semiconductor-device in the negative-resistance portion of the characteristic. The feature characterizing any negative-resistance device is indeed, not the value of the negative resistance r $(-)$, but the negative power released in the negative-resistance portion of the current-voltage characteristic. This power must be as great as possible in any design containing negative resistances. Both classes of negative-resistance semiconductor-devices (i.e. either with first-class or second-class current-voltage characteristic) can be used in oscillating circuits as well as in amplifier circuits. The particular conditions of their use in switching circuits are discussed in the last part of the article. There are 15 figures and 14 references: 6 Soviet-bloc and 8 non-Soviet-bloc. The references to the four most recent English-language publications read as follows: Shockley. "Unique properties of the 4-layer diode". Electronic Industries & Tele-Tech, 76, no. 8, 1957. Philips, Chang. "Germanium power switching devices." IRE Transactions on Electron devices, ED-5, no. 1, 1958; Read. "A proposed high frequency

Card 2/3

Semiconductor devices with negative resistance

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S/106/61/000/002/004/006
A055/A133

negative resistance diode." BSTJ, XXXVII, no. 2, 1958;   Sommers. "Tunnel diodes
as high frequency devices." Proc. IRE, 47, no. 7, 1959

SUBMITTED: April 27, 1960.

Card 3/3

GARYAINOV, S.A., red.; YENYUTIN, V.V., red.; LARIONOV, G.Ye., tekhn.
red.

[Negative-resistance semiconductor devices] Poluprovodnikovye
pribory s otritsatel'nym soprotivleniem; sbornik perevodnykh
statei. Moskva, Gos. energ. izd-vo, 1962. 238 p.
(MIRA 15:4)

(Transistors)

BERG, M.A.; GARYAINOV, S.A.

    Experimental study of the switching operation in two-electrode
p-n-p-n transistor devices with negative resistance. Radiotekhnika
17 no.1: 51-58 Ja '62.   (MIRA 15:2)

    1. Deystvitel'nyye chleny Nauchno-tekhnicheskogo obshchestva
radiotekhniki i elektrosvyazi imeni Popova.
                      (Transistors)

ABSTRACT: A detailed exploration of the characteristics of an N-transistor
(proposed by V. I. Stafeyev, et al., Rad. i elektronika, 1962, 7, 8, 1404) reveals
that this device is kindred to the n-p-n-p transistor. Static input and output
characteristics of N-transistors for common-base, common-emitter, and
common-collector circuits are described. The input characteristics are voltage-
ambiguous (S-type); the output characteristics in the common-base and common-
emitter circuits are current-ambiguous (N-type); in the common-collector
circuit, the characteristics are practically single-valued. Experimentally

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L 31042-65

ACCESSION NR: AP5002910

determined families of characteristics of diffusion-alloy N-transistors are presented. Orig. art. has: 8 figures.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN SSSR (Physico-Technical Institute, AN SSSR)

SUBMITTED: 09Sep63   ENCL: 00   SUB CODE: EC

NO REF SOV: 002   OTHER: 002

Card 2/2

L 60879-65

AUTHOR: Smolko, G. G.; Osipov, V. V.; Stafeyev, V. I.; Garyainov, S. A.; Popova, M. V.

TITLE: N-transistors as active circuit elements

TOPIC TAGS: N transistor, common emitter circuit, p n p n junction, p n p n transistor

ABSTRACT: A description is given of the use of N-transistors in common-emitter circuits. Applications include switching circuits, converters, pulse generators, and flip-flops. The transistor has a p-n-p-n structure between emitter and base, so that its input volt-ampere characteristics are of the S type (see Fig. 1 of the Enclosure). The low value of the switching voltage depends on the collector current and varies within 0.2—2 v. The output volt-ampere characteristic (Fig. 2) shows a sharp decrease in negative resistance with increase in bias. Voltage required for maximum current does not exceed 0.2 v; collector current can reach 30—50 mamp. Within a wide range of collector voltages, minimum collector current is in tens of microamperes. Orig. art. has: 10 figures.   [DW]

Card 1/4

L 60879-65

ACCESSION NR: AP5020126

ASSOCIATION: none

SUBMITTED: 11May64   ENCL: 02   SUB CODE: EC

NO REF SOV: 002   OTHER: 000   ATD PRESS: 4063

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Card 2/4

L 60879-65
ACCESSION NR: AP5020126
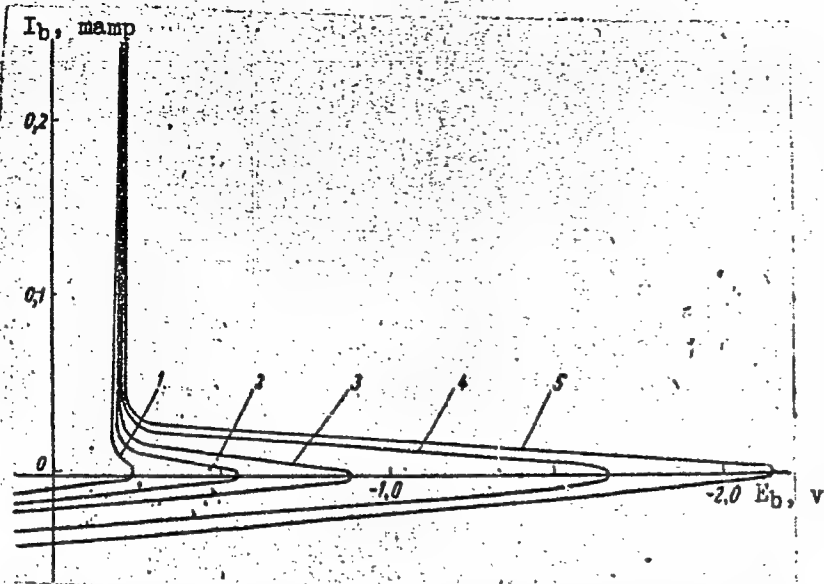
Fig. 1. Input char-
acteristics at var-
ious collector cur-
rents (T = 20.5C)

1 - 0.02 mamp;
2 - 0.03 mamp;
3 - 0.05 mamp;
4 - 0.08 mamp;
5 - 0.1 mamp.

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L 60879-65
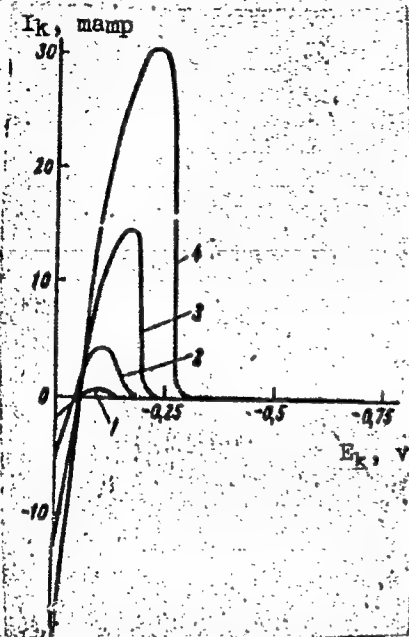ACCESSION NR: AP5020126   ENCLOSURE: 02

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Fig. 2. Output characteristics at
various base biases

1 - -0.25 v; 2 - -0.3 v;
3 - -0.35 v; 4 - -0.4 v.

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L 29309-66   EWT(1)
ACC NR: AP6012338

SOURCE CODE: UR/0108/66/021/004/0016/0024

AUTHOR: Garyainov, S. A. (Active member)

$3\frac{3}{13}$

ORG: Scientific-Technical Society of Radio Engineering and Electric Communication im. A. S. Popov (Nauchno-tekhnicheskoye obshchestvo radiotekhniki i elektrosvyazi)

TITLE: Feedback in devices with negative resistance

SOURCE: Radiotekhnika, v. 21, no. 4, 1966, 16-24

TOPIC TAGS: negative feedback, positive feedback, pn junction, electric resistance, volt ampere characteristic

ABSTRACT: The author points out that circuits using semiconductor devices with one or several p-n junctions, with properties of one-port networks, cannot be analyzed by techniques applicable to two-port networks. Consequently the concept of positive and negative feedback, usually associated with two-port networks, must be revised to accommodate semiconductor devices. To this end, he analyzes the relation between positive feedback in a circuit and the volt-ampere characteristic and derives a general theorem common to all types of devices with negative resistance. The theorem states that negative-resistance devices having internal positive feedback proportional to the voltage have a static volt-ampere characteristic of class I (are voltage controlled) and have capacitive reactance in the negative-resistance sec-

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UDC: 621.375.133

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ACC NR: AP6012338

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tions. Devices having internal positive current feedback have static volt-ampere
characteristic of class II (are current controlled) and their reactance in the
negative-resistance section is inductive. One of the possible proofs of this
theorem is presented. Orig. art. has: 8 figures and 8 formulas.

SUB CODE: 09/   SUBM DATE: 20May65/   ORIG REF: 006/   OTH REF: 006

Card 2/2 BK

GARYAINOV, V.A.

USSR/ Geology - Jurassic period vertebrates

Card 1/1   Pub. 22 - 37/50

Authors   : Garyainov, V. A.

Title   : About the new discovery of Triassic period vertebrates

Periodical   : Dok. AN SSSR 100/1, 141-142, Jan. 1, 1955

Abstract   : Brief reports are presented on the finding of Triassic period vertebrates
               in various sections of the USSR during the year 1952-1953. Two USSR
               references (1936-1949).

Institution : ....

Presented by : Academician D. V. Nalivkin, October 6, 1954

GARYAINOV, V.A.

Stratigraphy of Tatarian sediments in the middle Ural Basin.
Uch.zap.SGU 65:81-89 '59.   (MIRA 16:1)
            (Ural Valley—Geology, Stratigraphic)

OCHEV, V.G.; SHISHKIN, M.A.; GARYAINOV, V.A.; TVERDOKHLEBOV, V.P.

New data on the stratigraphic division of the Triassic according to
vertebrates in the Ural Mountain portion of Orenburg Province. Dokl.
AN SSSR 158 no.2:363-365 S '64.   (MIRA 17:10)

1. Nauchno-issledovatel'skiy institut geologii pri Saratovskom gosudar-
stvennom universitete im. N.G.Chernyshevskogo i Paleontologicheskiy insti-
tut AN SSSR. Predstavleno akademikom Yu.A.Orlovym.

MAVRIN, K.A.; GARYAINOV, V.A.

Basic characteristics of the tectonics of the western slope of
the Southern Urals and the Orenburg portion of the Ural mountain
region. Izv. vys. ucheb. zav.; geol. i razv. 7 no.6:36-42 Je '64.
(MIRA 18:7)

1. Saratovskiy gosudarstvennyy universitet.

GAPTKIN, N. V.

GAPTKIN, N. V. --"On the Role of the Nervous System in the Pathogenesis of the
Rat." *(Dissertations for Degrees in Science and Engineering Defended at USSR
Higher Educational Institutions) All-Union Inst of Experimental Veterinary
Science of the Min of Agriculture USSR, Moscow, 1955

SO: Knizhnaya Letopis', No. 25, 18 Jun 55

* For Degree of Candidate in Biological Sciences

USSR / Forestry. Forest Economy   K-3

Abs Jour: Ref Zhur-Biol., No 13, 1958, 56394

Author : Akhromeyke, A.I., Gar'yanova, O.Z.,Pankratova,N.M.

Inst   : All-Union Scientific-Research Institute of Fores-
          try and Mechanization of the Forest Economy

Title   : The Influence of Various Doses of 2,4-D and of 2,
          4-D Butyl-Ether on Aspen and Birch

Orig Pub: Byul. nauchno-tekhn. inform. Vses. n.i. in-t les-
          ovodstva i mekhaniz. lesn. kh-va, 1957, No 4,17-21

Abstract: The physiology department of the All Union Scien-
          tific Research Institute of Forest Mechanization
          conducted experiments in 1956 on the treatment of
          underbrush of aspen, birch, willow and other gen-
          era with preparations of 2,4-D and by 2,4-D butyl

Card 1/2

GARYAYEV, Andrey L'vovich; SUSHKIN, I.N., redaktor; EVENSON, I.M., tekhnicheskiy redaktor.

[Preparation and repair of metal structures in metallurgical plants] Izgotovlenie i remont metallokonstruktsii na metallurgicheskom zavode. Moskva, Gos.nauchno-tekhn.izd-vo lit-ry po chernoi i tsvetnoi metallurgii, 1957. 379 p.   (MIRA 10:6)
(Metalwork)

GARYAYEV, Andrey L'vovich; GERMAIDZE, G.Ye., retsenzent; SKOROBOGACHEVA, A.P.,
     red. izd-va; TURKINA, Ye.D., tekhn. red.

[Repairing metal parts of technical equipment in metallurgical shops]
Remont metallokonstruktsii tekhnologicheskogo oborudovaniia metallurgi-
cheskikh tsekhov. Sverdlovsk, Gos. nauchno-tekhn. izd-vo lit-ry po
chernoi i tsvetnoi metallurgii Sverdlovskoe otd-nie, 1961. 38 p.
                                             (MIRA 14:7)
     (Metallurgical plants—Equipment and supplies)

GARYAYEV A L

GARYEYEV, Andrey L'vovich; GERMAIDZE, G.Ye., retsenzent; SKOROBOGACHEVA, A.P.,
red. izd-va; TURKINA; Ye.D., tekhn. red.

[Cooling equipment of open-hearth furnaces; design and manufacturing
process] Okhlazhdaemaia armatura martenovskikh pechei; konstruktsiia i
tekhnologiia izgotovleniia. Sverdlovsk, Gos. nauchno-tekhn. izd-vo
lit-ry po chernoi i tsvetnoi metallurgii Sverdlovskoe otd-nie, 1961.
51 p.   (MIRA 14:7)
        (Open-hearth furnaces—Equipment and supplies)

SHADRIN, G.A.; KASHCHENKO, F.D.; GARYAYEV, A.L.

      Properties of various kinds of bronze hard facing on steel.
      Avtom. svar. 17 no.2:81-85 F '64.   (MIRA 17:9)

      1. Magnitogorskiy metallurgicheskiy kombinat.

SHADRIN, G.A.; KASHCHENKO, F.P.; GARYAYEV, A.L.

Manufacture of bimetal parts by means of mechanized hard facing of bronze on steel. Avtom. svar. 17 no.5:88-91 My '64. (MIRA 17:11)

1. Magnitogorskiy metallurgicheskiy kombinat.

L 29956-65   EWT(m)/EWP(e)/EWP(w)/EWA(d)/EWP(v)/T/EWP(t)/EWP(k)/EWP(b)   Pf-4   JD/HM

ACCESSION NR: AP5008000   S/0125/64/000/010/0047/0052

AUTHOR: Kashchenko, F. D.; Garyayev, A. L.; Smirnov, B. I.

TITLE: New powder rod for surfacing rollers

SOURCE: Avtomaticheskaya svarka, no. 10, 1964, 47-52

TOPIC TAGS: rolling mill, powder metallurgy, powder metal, metal surfacing

Abstract: The object of this study was the development of a new grade
of powder rod for surfacing rollers of hot rolling mills which would make
it possible to produce a surfacing metal with more favorable operational
engineering characteristics.
    The work was conducted by the welding laboratory and the Central
Plant Laboratory of the Magnitogorsk Metallurgical Combine. Taking part
in the work were Engineers G. A. Shadrin, L. V. Simonov, G. A. Denisova
and N. P. Kashirin.
    Studies of the surface layer of rollers which had been surfaced
with PP-3KhV28 powder rod indicated that a large quantity (50% and more)
of extremely stable retained austenite is contained in this metal. Such
a structure makes it impossible to fully realize the favorable effect of
tungsten and chromium. Guided by these considerations and also by the

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L 29956-65
ACCESSION NR: AP5008000

research which was done, the authors developed grade MMK-61 powder rod
for surfacing rollers of hot rolling mills. This rod made it possible to
produce a surfacing metal with high carbon contnet and a relatively small
amount of alloying elements. The chemical content of the metal which is
deposited depends on type of flux and on surfacing conditions. Flux
48-OF-6 is the most neutral with respect to chemical action on the sur-
facing metal. This flux has good engineering properties, but has two dis-
advantages-- it quickly absorbs moisture from the air which leads to the
formation of pores in the surfacing metal, and it is easily pulverized.
Flux AN-20, which is widely used for surfacing, partially oxidizes the
carbon, manganese and chromium, which silicon is reduced from the flux.

    A comparatively hard deposit of metal is produced by surfacing with
MMK-61, PP3Kh2V8 and PP-5Kh4V3F powder rods. The metal produced in sur-
facing with MMK-61 rod is softer and has two maximums which correspond to
tempering temperatures of 350 and 500°C. This is explained by the differ-
ent mechanisms of retained austenite decomposition during tempering.

    Production tests of the deposited metal were carried out in the
wire-strip shop of the Magnitogorsk Metallurgical Combine. The heavily
loaded rollers of the second stand on the "300-2" strip mill were selected
for surfacing. Surfacing was done on a roller surfacing machine with
AN-20 flux, using MMK-61 powder rod with a diameter of 3.5 mm, I_w--300-320

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L 29956-65
ACCESSION NR: AP5008000

amps, U--30-32 volts, V_s--38 meters per hour. In order to eliminate crack formation, the rollers were preheated by induction to 420-450°C using current of industrial frequency. After surfacing, the rollers were tempered at 500-550°C. They were then pack cooled for 48 hrs to 60°C with asbestos powder. This technique made it possible to produce a surfaced metal without cracks.

Determined in tests of the surfaced rollers were: wearability (tons/mm), durability for a single installation (days), absolute wear (mm) for a single installation, type of wear and work capacity of the rollers with respect to mechanical treatment. From the characteristics of the rollers surfaced with MMK-61, PP-3Kh2V8 and PP-5Kh4V3F powder rods, it is apparent that the durability of rollers surfaced with MMK-61 powder wire is higher than that of rollers surfaced with PP-3Kh2V8 and PP-5Kh4V3F. Orig. art. has 1 graph, 4 figures, and 2 tables.

ASSOCIATION: Magnitogorskiy metallurgicheskiy kombinat (Magnitogorsk Metallurgical Combine)

SUBMITTED: 11Dec63   ENCL: 00   SUB CODE: MM

NO REF SOV: 005   OTHER: 000   JPRS
Card 3/3

GOROZHANINOV, N.Ye., kand. tekhn. nauk; GARYAYEV, A.L., inzh.; ...Ha.,
L.I., inzh.

Submerged melt welding of the rails of crane tracks. Svar.
proizv. no.9:35 S '65.

1. Ural'skiy "Promstroyniiproyekt" (for Gorozhaninov).
2. Magnitogorskiy metallurgicheskiy kombinat (for Garyayev).
3. Nizhne-Tagil'skiy metallurgicheskiy kombinat (for Ivanov).

KASHCHENKO, F.F.; GARYAYEV, A.L.; KOVALENKO, V.V.

Device for heating cones and bells of charging equipment. Avtom.svar.
18 no.1:64-65 Ja '65.   (MIRA 18:3)

1. Magnitogorskiy metallurgicheskiy kombinat (for Kashchenko,
Garyayev). 2. Institut gaza AN UkrSSR (for Kovalenko).

GARYAYEV, G.R., mayor meditsinskoy sluzhby

Frequency and causes of recurrent dysentery. Veen.-med.zhur. no.3:
63-64 '64.   (MIRA 18:5)

KON'KOV, Arkadiy Sergeyevich; RAYTSES, Veniamin Borisovich; GARYAYEV,
P.I., inzh., retsenzent; KAZAKOV, S.S., inzh., retsenzent;
TYAGUNOV, V.A., kand.tekhn.nauk, red.; DUGINA, N.A., tekhn.red.

[Skill in forging] Masterstvo kuznetsa. Moskva, Gos.nauchno-
tekhn.izd-vo mashinostroit.lit-ry, 1959. 350 p.

(MIRA 14:1)

(Forging)

(A) L 12117-66   EWT(m)   GS

ACC NR: AT6001769   SOURCE CODE: UR/0000/65/000/000/0138/0144

AUTHOR: Avakov, A. I.; Garyaynov, K. E.; Yakovlev, L. T.

ORG: None

TITLE: Thermal stresses in porous concretes during hydrothermal treatment

SOURCE: AN BSSR. Institut teplo- i massoobmena. Voprosy nestatsion-ernogo perenosa tepla i massy (Problems of nonstationary heat and mass transfer). Minsk, Nauka i tekhnika, 1965, 138-144

TOPIC TAGS: thermal stress, concrete, porosity

ABSTRACT: In porous concretes (materials with a low heat conductivity), hydrothermal treatment causes significant temperature gradients which can lead to the appearance of destructive stresses. The present article describes an attempt to derive analytically calculating formulas for determination of the temperatures and the thermal stresses associated with them, since these stresses can be decisive for determination of the desired rate of temperature change. In the general case, the temp-erature stresses at a moment of time, tau, can be expressed by the rela-tionship:

$$\sigma(l, \tau) = f(l_\tau - l_0).$$

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L 12117-66

ACC NR: AT6001769

For an analytical expression of the temperature stresses in terms of the values of the temperature, the time, and the flow coordinate, it is required to find:

$$\sigma = f_1(t),\ t = \varphi(\tau,\ x),\ \text{т. е.}\ \sigma = \psi(\tau,\ x).$$

The article considers an infinite slab with a thickness of 2R, and an initial temperature of the medium and the material, t_o; the average temperature, t_{av}, varies according to the equation $t_{av} = t_o + b_{tau}$, and heat transfer obeys the convection law. The initial and boundary conditions are:

$$t(x,\ 0) = t_0,\ \frac{\partial t(0,\ \tau)}{\partial x} = 0,$$

$$-\frac{\partial t(R,\ \tau)}{\partial x} + H[(t_0 + b\tau) - t(R,\ \tau)] = 0.$$

It is required to determine t(x, tau), that is, to solve the equation

$$\frac{\partial t}{\partial \tau} = a\frac{\partial^2 t}{\partial x^2}.$$

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L 12117-66

ACC NR: AT6001769

The article proceeds to a mathematical development which is said to result in absolute values of the temperature stresses. Thus, during the period of heating of porous concretes, the elastic modulus and the temperature stresses are smaller than during the cooling period. During the cooling period, after the end of the chemical processes in the concrete, the elastic modulus is considerably increased and the thermal stresses are greater than during the heating period. Orig. art. has: 7 formulas and 2 figures.

SUB CODE: 11, 13/ SUBM DATE: 02Sep65/ ORIG REF: 002/ OTH REF: 001

Card 3/3

GARYAZEV V.V.

KOZHEVIN, V.G., nachal'nik; INOZEMTSEV,P.P., nachal'nik; BELEVTSEV, T.N.,
upravlyayushchiy; GARYAZEV, V.V., upravlyayushchiy; GRACHEV, L.I., upralya-
yushchiy; KONOVALOV, G.I., upravlyayushchiy; GILLER, A.I., nachal'nik;
GUBIN, N.I., glavnyy inzhener.

The Soviet miners honor Miners' Day with new industrial victories.
Ugol' 28 no.8:5-15 Ag '53.   (MLRA 6:7)

1. Kombinat Kuzbassugol' (for Kozhevin). 2. Kombinat Karagandaugol'
(for Inozemtsev). 3. Trest Stalinugol' (for Belevtsev). 4. Trest Kalinin-
ugol' (for Gryazev). 5. Trest Molotovugol' (for Grachev). 6. Trest
Shchekinugol' (for Konovalov). 7. Shakhtoupravlenie No.9/12 tresta
Shchekinugol' (for Giller). 8. Shakhta No.34 trestu Krasnoarmeyskugol'
(for Gubin).   (Coal mines and mining)

GARYAZHA, V. G. (Cand. Tech. Sci.)

"Results of an Experimental Investigation of Heat Transfer during the Boiling of Massecuite,"

report presented at the Sci. and tech. session on Heat Exchange during Change of Aggregate State of Matter (by Comm on High Steam Conditions, Power Inst, AS USSR, and Inst. Thermal Engineering, AS UkrSSR) Kiev, 23-28 Sept 1957.

KTIPP

GARYAZHA, V. T.　Cand Tech Sci -- (diss) "Study of the Heat Exchange During the BOILING Boiling of Second-Product Fuel ." Kiev, 1957.　19 pp with graphs, 22 cm. (Min of Higher Education Ukrainian SSR, Kiev Engineering Inst of Food Industry im A. I. Mikoyan), 150 copies (KL, 25-57, 112)

- 52 -

GARYAZHA, V.T.

Thermal design of a vacuum apparatus for the second product.
Trudy KTIPP no.17:81-90 '57.   (MIRA 13:1)
        (Vacuum apparatus)
    (Sugar manufacture--Equipment and supplies)

CARYAZHA, V.T.

GARYAZHA, V.T.

Results of testing vacuum pans for second massocuite. Sakh.
prom.31 no.9:15-20 S '57.   (MIRA 10:12)

1. Kiyevskiy tekhnologicheskiy institut pishchevoy promyshlennosti
imeni Mikoyana.

(Sugar machinery)

GARYAZHA, V.T.

Calculation of the coefficients of heat transmission in vacuum
apparatus for the second product. Trudy KTIPP no.19:187-193 '58.
(MIRA 12:12)

(Sugar machinery) (Evaporating appliances) (Heat--Transmission)

GARYAZHA, V.T.

Temperature field along the section of the tube during the boiling
of green sirup. Trudy KTIPP no.22:35-39 '60.   (MIRA 14:3)
     (Sugar manufacture) (Heat—Transmission)

POPOV, V.D.; GARYAZHA, V.T.; YATSENKO, Ye.A.

Physical parameters of molasses waste. Trudy KTIPP no.22:43-47
'60.   (MIRA 14:3)

(Molasses)

TOBILEVICH, N.Yu.; SEGAN', I.I.; GARYAZHA, V.T.

Determining the heat transfer coefficients in calculation for
installations use in evaporating and heating molasses waste.
Izv.vys.ucheb. zav.; pishch. tekh. no.6:112-118 61.   (MIRA 15:2)

1. Kiyevskiy tekhnologicheskiy institut pishchevoy promyshlennosti,
kafedra teploenergetiki.
                    (Molasses)(Heat—Transmission)

GARYAZHA, V.T.

Lowering the intensity of heat transfer during the frothing
of products. Sakh.prom.35 no.3:47 Mr '61.   (MIRA 14:3)

1. Kiyevskiy teknologicheskiy insitut pishchevoy promyshlennosti.
        (Evaporation) (Heat—Transmission)

TOBILEVICH, N.Yu. [Tobilevych, N.IU.]; SAGAN', I.I. [Sahan', I.I.];
    GARYAZHA, V.T. [Hariazha, V.T.]

Heat circuit for distilleries applying the steaming of molasses
distillery wash concentrate. Khar.prom. no.4:70-73 O-D '62.
                                                        (MIRA 16:1)
        (Distilleries—Equipment and supplies)

GARYAZHA, V.T.; SAGAN', I.I.; MATVIYENKO, B.A.; STEPCHUK, I.D.

Experimental study of heat transfer in the evaporation of alkali wastes. Trudy KTIPP no.25:65-68 '62. (MIRA 16:5)
(Evaporating appliances) (Heat—Transmission)

TOBILEVICH, N.Yu.; SAGAN', I.I.; GARYAZHA, V.T.; TKACHENKO, S.I.

Heat circuit of an alcohol distillery applying the steaming of dis-
carded molasses. Spirt.prom. 29 no.1:24-27 '63.   (MIRA 16:2)

1. Kiyevskiy tekhnologicheskiy institut pishchevoy promyshlennosti
imeni Mikoyana.   (Distilleries—Equipment and supplies).

TOBILEVICH, N.Yu.; SAGAN', I.I.; GARYAZHA, V.T.

Studying the heat transfer in the preheaters of sugar factories.
Sakh. prom. 37 no.10:20-26 O '63.   (MIRA 16:12)

1. Kiyevskiy tekhnologicheskiy institut pishchevoy promyshlennosti.

TOBILEVICH, N. Yu.; SAGAN', I. I.; GARYAZHA, V.T.; TKACHENKO,S. I.;
VOVCHENKO, V. S.; IVASHKEVICH, V. V.

Effect of the rate of the sugar juice motion on the thermal
resistance of the deposits and on the heat transfer during
heating. Izv.vys.ucheb.zav.; pishch.tekh.no. 2:106-109 '64.
(MIRA 17:5)

1. Kiyevskiy tekhnologicheskiy institut pishchevoy promyshlen-
nosti, kafedra promyshlennoy teploenergetiki.

RUBILEVICH, N.Ya., kand. tekhn. nauk, dotsent; [illegible] C'RYACH, V.Ya., kand. tekhn. nauk; [illegible]

Studying the effect of juice movement velocity on the coefficient of scale formation in heaters of sugar factories. Sakhar. prom. 34 no. 12-14 '75.

1. Pyryatiy tekhnologichesk [illegible]

ZHUCHKOVA, V.K.; SMIRNOVA, Ye.D.; GVOZDETSKIY, N.A., prof., red.;
GARYNOV, F.I., red.; MALAKHOV, F.N., red.; CHISTYAKOVA,
K.S., tekhn. red.

[Physical geography of the U.S.S.R.; selected lectures for
correspondence course students attending geographical
faculties of state universities] Fizicheskaia geografiia
SSSR; izbrannye lektsii dlia studentov-zaochnikov geografi-
cheskikh fakul'tetov gosudarstvennykh universitetov. Pod
red. N.A.Gvozdetskogo. Moskva, Izd-vo Mosk. univ. No.7. [By]
V.K.Zhuchkova, E.D.Smirnova. 1963. 69 p.   (MIRA 17:3)

1. Moscow. Universitet. Nauchno-metodicheskiy kabinet po za-
ochnomu i vechernemu obucheniyu.

GRIGOR', L. A.

"Spring Runoff of Rain Waters and Its Dependence Upon the Character of the Freezing," Meteorol. i Gidrologiya, No 4, 1955, pp 37-39

The author presents the results of observations on spring rain runoff which were conducted at the Persianovsk Experimental Land Improvement Station in the course of 5 years (1949-1953). The surface runoff was computed on a portion 73.5 hectares in area and on runoff areas (in 1952) 200 and 400 m²size. The runoff of the rain waters in the mean amounted to about 65% of the total spring runoff of rain and thawed snow waters. The co-efficient of runoff of rain waters has been found to vary in general directly with the depth of freezing of the soil and inversely with the thickness of the upper thaw layer of the soil. Under the thawing state of soil spring rains as a rule do not cause any surface runoff. (RZhGeol, No 6, 1955) SO: Sum.No. 713, 9 Nov 55

GARYUGIN, G. A.

Garyugin, G. A.

"Estuary Irrigation of Steppe Crop Plantations in the Azov Area." Min Higher Education USSR. Novocherkassk Soil Improvement Engineering Inst. Novocherkassk, 1955 (Dissertation for the degree of Candidate in Agricultural Sciences)

SO: Knizhnaya letopis' No. 27, 2 July 1955

GARYUGIN, G. A.

USSR.

6177* Construction of Estuary-Like Formations—An Effective Method for Checking Soil Erosion. Ustroistvo limanov effektivnyi sposob bor'by s eroziei pochvy. (Russian.) G. A. Garlugin. Zemledelie, v. 3, no. 1, Jan. 1955, p. 13-16. Includes photographs.

GARYUGIN, G. A.

Subject	: USSR/Meteorology	AID P - 2500
Card 1/1	Pub. 71-a - 10/26	
Author	: Garyugin, G. A.	
Title	: Surface soil conditions and their influence on the spring runoff	
Periodical	: Met. i Gidro., 3, 40-42, My-Je 1956	

Abstract   : The dependence between the spring runoff and various crops
is discussed. The author maintains that the runoff in-
creases on extensively developed fields, whereas there is
a marked decrease in the runoff for virgin soil and waste-
lands plowed for the first time. Two tables, 1 diagram.

Institution: None

Submitted : No date

GARYUGIN, G.A.

Role of the vertical taproots of fruit trees in utilizing subsoil moisture. Agrobiologiia no.2:125-127 Mr-Ap '57.   (MLRA 10:5)

1.Persianovskaya opytno-meliorativnaya stantsiya, Rostovskaya oblast'.

(Fruit trees) (Roots (Botany))
(Soil moisture)

GARYUGIN, G.A., kand.sel'skokhozyaystennykh nauk

Effect of saturation irrigation in early fall on the growth
and fruit bearing of apple trees. Agrobiologiia no.2:292-293
Mr-Ap '62.

(MIRA 15:4)

1. Stavropol'skaya opytno-meliorativnaya stantsiya.
(Caucasus, Northern—Apple—Water requirements)

GI-YUGIN, G.A., kand. sel'skokhoz. nauk

Winter wheat in irrigated soils. Zemledelie 26 no.9:48-51 S '64.

1. Stavropol'skaya opytno-meliorativnaya stantsiya.

(MIRA 17-11)

GARYUSHKIN, S., ryadovoy

Follow-up of our articles. Komm. Vooruzh. Sil 5 no.22:96 N '64.

(MIRA 17:12)

MAKIYENKO, Nikolay Ivanovich; OBLIVIN, N.N., nauchnyy red.; GARYUNOVA, L.K., red.; TOKER, A.M., tekhn. red.

[Bench work]Slesarnoe delo. 2., perer. i dop. izd. Moskva, Proftekhizdat, 1962. 381 p. (MIRA 16:2)
(Machine-shop practice)

GARZANOV G.E.

Distr: 4E3d

Lubricating oil additive. V. V. Gal'chenko, A. M. Ravikovich, G. B. Garzanov, G. G. Vinner, B. L. Al'perovich, and L. A. Bondarchuk. U.S.S.R. 107,613, Sept. 25, 1957. Additive BZ-2 (3%) and 1% hexachloroethane are added to mineral lubricating oil.   M. Hosch.

5.1110

77541
SOV/65-60-2-1/15

AUTHORS: Ayzenshtayn, P. G., Velikovskaya, Ye. M., Garzanov,
G. Ye., Crushevenko, V. I., Sterkhova, L. N.

TITLE: Anastas'yevsk Crude Oil From Bed IV as a Raw Material
for Low-Viscosity Oils

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1960, Nr 2,
pp 1-6 (USSR)

ABSTRACT: Of the three oil-producing beds IV, V, VI of the
Anastas'yevsk deposit, Krasnodar Region, only the first
yields crude oil suitable for production of special oils.
The bed is capable of supplying the Soviet economy
with all the needed types of low solid point special
oils. The solidification point of the crude oil is -60° C
and that of the machine distillate is -20° C. Crude
oils from the other two beds require desparaffiniza-
tion if special oils are to be produced. According
to the data of Yaroslavl' and Ger al refineries,
crude oil from bed IV contains 51.6% methane-
naphthenes, 7.6% light-, 26.0% intermediate-, and

Card 1/3

3

Anastas'yevsk Crude Oil From Bed IV as a
Raw Material for Low-Viscosity Oils

77541

SOV/65-60-2-1/15

13.4% heavy aromatic compounds and tars, less than
0.2% paraffin, and less than 0.1% S; the tar content
reaches 35 to 40% after extraction of bright stock
up to 300^0 C. All types of special oils can be pro-
duced from this crude oil, which contains up to 80%
fuel and lube low-solid point distillates. Using the
same methods as applied to Baku oils, the two refineries
produced 14 different products whose solid points
ranged from -12 to -70^0 C. Additional purification
was necessary only in a few cases. The purified
products were better than those from the Baku and
Emba crude oils. For instance, transformer oils
could be obtained from the Anastas'yevsk oils that
did not require antioxidant and antidepressing
additives. However, the transformer oil was of
lower quality than imported oils. To achieve the
latter's quality, the Yaroslavl' refinery purified
the distillate with SO_3 gas and added 0.2% ionol or

Card 2/3   0 1% VTI-1, another antioxidant, to the product.

Anastas.'yevsk Crude Oil From Bed IV as a
Raw Material for Low-Viscosity Oils

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SOV/65-60-2-1/15

The obtained oil was colorless, highly stable, and
had mp -56° C. The Gor'ki refinery obtained trans-
former oil of the same high quality (mp below -50° C)
by purifying the distillate with 99% H_2SO_4, also adding
0.2% ionol. Both SO_3 and H_2SO_4 alter the proportion
of hydrocarbons; i.e., they almost double the methane
& naphthene contents at the expense of aromatic
compounds and tars. Special oils MK-8, MVP, AU, and
SU can also be produced from Anastas·yevsk crude oils.
The first was of higher quality than specifications
require, but the latter two brands had flash points
below permitted values. The residue after the extrac-
tion of special oils can be utilized for production of
other oils and bitumen. I. Zirchenko, N. Zolotareva,
and O. Morozova of the Gor'ki plant and G. Voronova,
A. Mel'nikova, and O. Klochkova of the Yaroslavl'
plant took part in the work. There are 3 tables.

ASSOCIATION: Petroleum-Lubricant Refineries (Neftemaslozavody)
Card 3/3

GARZANOV, G.Ye.

"Production of lubricating oils" by A.E.Al'tshuler, P.I.Korotkov,
V.L.Kazanskii, N.M.Gerasimenko. Reviewed by G.E.Garzanov. Khim.
i tekh.topl.i masel 5 no.7:68-69 Jl '60.   (MIRA 13:7)
        (Lubrication and lubricants)
        (Al'tshuler, A.E.)
        (Korotkov, P.I.)
        (Kazanskii, V.L.)
        (Gerasimenko, N.M.)

GARZANOV, G.Ye.

Closing word. Proizv. smaz. mat. no.6/8:188-191 '61. (MIRA 14:8)

1. Trest opytno-promyshlennogo proizvodstva "Neftemaslozavody".
(Lubrication and lubricants)

S/137/62/000/010/006/028
A052/A101

AUTHORS: Afanas'yev, I. D., Dobkin, I. Ye., Sazanova, M. N., Soltan, S. G.,
             Garzanov, G. Ye., Tokar', I. K., Chamin, I. A., Belosevich, V. K.,
             Pavlov, I. M.

TITLE: The effect of substances with a lower surface tension in the
             composition of synthetic·lubricants on the cold rolling of
             thin metal strips

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 10, 1962, 8,
             abstract 10D46 ("Novosti neft. i gaz. tekhn. Neftepererabotka i
             neftekhimiya", no. 4, 1962, 23 - 27)

TEXT: The data on the effect of various·technological lubricants on the
cold rolling of strips on a two- and four-high mill are cited. Synthetic greases,
- esters of saturated synthetic fatty acids, - reduce the friction and the re-
.sistance of metal to deformation at rolling of carbon steel and Ti (BT-1-T)
(VT-1-T) strips more effectively than animal fat, palm oil, mineral oils etc.
Synthetic lubricants, due to their low costs and good lubricating quality, should

Card 1/2

S/137/62/000/010/0C6/028
The effect of substances with a lower surface tension..A052/A101

be recommended for an extensive testing on cold rolling mills.

N. Yudina

[Abstracter's note: Complete translation]

Card 2/2

L 1349-66 · EWT(m)/EPF(c)/T : DJ

ACCESSION NR: AP5024387

UR/0286/65/000/015/0068/0068

665.521.5

AUTHOR: Bulantseva, T. P.; Garzanov, G. Ye.; Gorbunova, A. A.

TITLE: A gasoline-resistant grease. Class 23, No. 173367

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 15, 1965, 68

TOPIC TAGS: grease, gasoline resistant grease, lubricant

ABSTRACT: This Author's Certificate introduces: 1. A gasoline-resistant grease which contains ethylcarbitol, montan wax and caustic soda to increase its resistance to hydrocarbon vapors. 2. A modification of this grease which contains ethylcarbitol and montan wax in a 1:1 ratio.

ASSOCIATION: none

SUBMITTED: 29Nov63   ENCL: 00   SUB CODE: FP

NO REF SOV: 000   OTHER: 000

Card 1/1

L 00740-66   EWT(m)/EPT(c)/T   BW/DJ

ACCESSION NR: AP5021990   UR/0286/65/000/014/0065/0065
                                            665.4/.5

AUTHOR: Garzanov, G. Ye.; Vinner, G. G.; Maloletkov, Ye. K.; Bogdanov, Sh. K.;
Sergiyenko, V. G.; Petyakina, Ye. I.; Selivanchik, Ya. V.; Vertlib, Ya. Ye.;
Gusman, M. Ye.; Shames, F. Ya.; Smirnov, M. I.; Granat, A. M.; Bulantseva, T. P.;
Krylova, T. A.

TITLE: A method for producing hydraulic fluid. Class 23, No. 172947

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 14, 1965, 65

TOPIC TAGS: hydraulic fluid, petroleum product

ABSTRACT: This Author's Certificate introduces a method for producing hydraulic
fluid based on petroleum products. The efficiency of the fluid at low tempera-
tures is improved by using a velosite distillate with a flash point of 115-120°C
and a viscosity of less than 2200 centistokes at -40°C.

ASSOCIATION: Nauchno-issledovatel'skiy institut organizatsii, mekhanizatsii i
tekhnicheskoy pomoshchi (Scientific Research Institute for Organization, Mechani-
zation and Technical Assistance)

Card 1/2

L 00740-66

ACCESSION NR: AP5021990   O

SUBMITTED: 14Aug64   ENCL: 00   SUB CODE: FP

NO REF SOV: 000   OTHER: 000

Card 2/2

L 14574-66   EWT(m)/f   DJ

ACC NR: AP6005336   SOURCE CODE: UR/0413/66/000/001/0074/0074

INVENTOR: Papok, K. K.; Kreyn, S. E.; Vipper, A. B.; Zuseva, B. S.; Garzanov, G. Ye.;
Vinner, G. G.; Dobkin, I. Ye.; Afanas'yev, I. D.; Rogachevskaya, T. A.; Somov, V. A.;
Botkin, P. P.; Kuliyev, A. M.; Zeynalova, G. A.

ORG: none

TITLE: Preparation of motor oil. Class 23, No. 177579

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 1, 1966, 74

TOPIC TAGS: motor oil, antiwear additive, detergent additive

ABSTRACT: An Author Certificate has been issued for a preparative method for motor
oil, involving addition of a detergent and an antiwear additive to the oil base. The
method provides for the use of an alkyl-formaldehyde condensation product and of a
dialkyl dithiophosphate based on C_{12}-C_{16} alcohols as the additives.   [BO]

SUB CODE: 11/ SUBM DATE: 16Apr64/ ATD PRESS: 4/90

Card 1/1   UDC: 621.892.8

L 25630-66   EWT(m)/EWP(w)/T/EWP(t)   JD/DJ

ACC NR: AP6015646   *(A)*   SOURCE CODE: UR/0413/66/000/009/0055/0055

INVENTOR: Ravikovich, A. M.; Zolotova, I. D.; Garzanov, G. Ye.; Vinner, G. G.;
Petyakina, Ye. I.; Obleukhova, O. S.; Borshchevskiy, S. B.; Bagryantseva, P. P.

ORG: none

TITLE: Preparative method for antiwear additives. Class 23, No. 181223

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 9, 1966, 55

TOPIC TAGS: antiwear additive, monoolefin polymer, sulfurization

ABSTRACT: An Author Certificate has been issued for a preparative method of antiwear
additives by sulfurization of monoolefin polymers at 140—180C.   [BO]

SUB CODE: 11/ SUBM DATE: 16Jul64/ ATD PRESS: 4255

Card 1/1

L 01805-67   EnT(m)/T   DJ

ACC NR: AP6030592 *(AN)*   SOURCE CODE: UR/0413/66/000/016/0074/0074

INVENTOR: Garzanov, G. Ye.; Petyakina, Ye. I.; Bagryantseva, P. P.;
Shames, F. Ya.; Ravikovich, A. M.; Boshchevskiy, S. B.; Maloletkov, Ye. K.;
Selivanchik, Ya. V.; Gusman, M. Ye.; Skvirskiy, P. A.; Aver'yanov, V. A.;
Uzunkoyan, P. N.; Pisarchik, A. N.; Mikhaylov, Yu. A.; Belogradskiy, A. P.;
Bayevskiy, F. S.; Fomin, N. I.

ORG: none

TITLE: Method of obtaining a hydraulic lubricant.   Class 23, No. 185000.
[Announced by the Scientific Research Institute for Organization, Mechanization,
and Technical Assistance to Construction (Nauchno-issledovatel'skiy institut
organizatsii, mekhanizatsii i tekhnicheskov pomoshchi stroitel'stvu)]

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 16, 1966,
74

TOPIC TAGS: lubricant, lubricant additive, antioxidant additive, polymethacrylate,
hydraulic lubricant

ABSTRACT: An Author Certificate has been issued for a method of obtaining a
hydraulic lubricant by means of additives with an oil base. To expand the operat-

Card 1/2   UDC: 621.892.8:621.226

L 01805-67

ACC NR: AP6030592

ing temperature range of oil a mixture of commercial oils and oil residue are
taken as the oil base to which a multifunctional additive is added, such as EFO, an
antioxidant agent such as octadecylamine, and a depressing agent, such as a
polymethacrylate. [Translation]
                                                                      [NT]

SUB CODE: 11/ SUBM DATE: 25May65/.

Card 2/2

SUNDAIEV, I.P.; MAKAROV, Ye.F.; GARZANOV, I. Yu.; KORYTKO, L.A.

Oxidation of finely dispersed tin studied by means of Mössbauer effect. Kin. i kat. 6 no. 6:1108-1111 N-D '65 (MIRA 19:1)

1. Institut khimicheskoy fiziki AN SSSR. Submitted March 9, 1965.

GAREC, Gabriella (Mrs) (Budapest, VIII., Muzeum korut 6-8); SLESZIC, Tamas (Budapest, VIII., Muzeum korut 4

Examinations of thermal processes in methyl silicon organic polymers by means of microreactor-gas chromatography. Acta chimica Hung 41 no.3:269-250 '64.

1. Lehrstuhl fur Allgemeine und Anorganische Chemie der Lorand Eotvos Universitat, Budapest, und Forschungsgruppe fur Anorganische Chemie der Ungarischen Akademie der Wissenschaften, Budapest.

L 10873-66   EWT(m)/EWP(j)/T/ETC(m)   RPL   WW/RM

ACC NR: AP5025864   SOURCE CODE: UR/0020/65/164/004/0822/0825

AUTHOR: Nefedov, O. M.; Garzo, G.; Sekey, T.; Shiryayev, V. I.

ORG: Institute of Organic Chemistry im. N. D. Zelinskiy (Institut organicheskoy khimii); Inorganic Chemistry Research Group, Academy of Sciences, VNR, Budapest (Issledovatel'skaya gruppa po neorganicheskoy khimii Akademii nauk VNR)

TITLE: Structure and thermal degradation of cyclic and linear polymers of dimethyl-silylene and dimethylgermylene

SOURCE: AN SSSR. Doklady, v. 164, no. 4, 1965, 822-825

TOPIC TAGS: organosilicon compound, organogermanium compound, pyrolysis
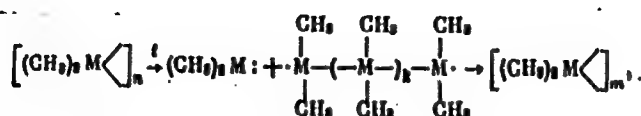
ABSTRACT: An IR, NMR, and mass-spectrometric study of the soluble part of the pro-ducts resulting from the reaction of $(CH_3)_2SiCl_2$ with lithium in tetrahydrofuran showed that it consists mainly (95—97%) of crystals melting at 228—231C and forming the cyclic polymer $[(CH_3)_2Si]_6$. Similarly, a mass-spectrometric analysis con-firmed that the germanium polymer, melting at 207—209C, also forms the cyclohexamer $[(CH_3)_2Ge]_6$. Pyrolysis of dimethylsilylene and dimethylgermylene at moderate temperatures (up to 350—400C) leads mainly to the rupture of M-M bonds to the formation of monomeric, dimeric, and polymeric biradicals:

Card 1/2

L 10873-66

$$\left[(CH_3)_2 M\triangleleft\right]_n \xrightarrow{t} (CH_3)_2 M: + \cdot \overset{CH_3}{\underset{CH_3}{M}} - (-\overset{CH_3}{\underset{CH_3}{M}}-)_k - \overset{CH_3}{\underset{CH_3}{M}} \cdot \rightarrow \left[(CH_3)_2 M\triangleleft\right]_{m'}.$$

where M = Si or Ge; k = 0—4 or more; m = 3(?), 4—6 and more. In the absence of special acceptors, these biradicals recombine chiefly with one another, forming the cyclic polymers $\underline{/}(CH_3)_2M\overline{\triangleleft/}_m$. The data obtained indicate that pyrolysis of the polymers $\underline{/}(CH_3)_2M\underline{<\_/}_n$, where M = Si, Ge, Sn, or Pb, can be used as a general method of generating the corresponding carbenoids $(CH_3)_2M:$. The paper was presented by B. A. Kazanskiy, Member of AN SSSR, 26 Mar 65. Authors thank M. I. Gorfinkel', A. S. Khachaturov, and L. A. Leytes for carrying out the spectroscopic determinations. Orig. art. has: 2 tables.

SUB CODE: 07 / SUBM DATE: 11Mar65 / ORIG REF: 004 / OTH REF: 007

Card 2/2

L 46224-66   EWP(j)   AT/RM

ACC NR: AT6034084   SOURCE CODE: HU/2502/65/045/004/0301/0311

AUTHOR: Fritz, Denes--Fritts, D.; Garzo, Gabriella; Szekely, Tamas--Sekei, T.;
Till, Ferenc

ORG: Department of General and Inorganic Chemistry, L. Eotvos University, Budapest;
Research Group for Inorganic Chemistry, Hungarian Academy of Sciences, Budapest

TITLE: Anomalous response of the flame ionization detector to organosilicon compounds

SOURCE: Academia scientiarum hungaricae. Acta chimica, v. 45, no. 4, 1965, 301-311

TOPIC TAGS: organosilicon compound, gas chromatography, chemical laboratory apparatus

ABSTRACT: An inversion of the gas chromatographic
peaks of organosilicon compounds can be observed when detection is done
by flame ionization detector. This effect also appears under conditions
where a hydrocarbon gives normal and well-evaluable peaks. The following
factors have been studied concerning their influence of the peak inversion:
flow rates of the fuel and scavenging gases, the chemical nature of the
sample, and the voltage of the detector. The inverted peaks permit the gas-
chromatographic estimation of the characteristic C/Si ratio of an unknown
organosilicon compound. A flame ionization detector operating with a mixed
hydrogen-hydrocarbon flame detects organosilicon compounds as negative
peaks. On this basis, such detectors are recommended for use in the
qualitative analysis of organosilicon compounds. Orig. art. has: 6 figures and
4 tables. [Orig. art. in Eng.] [JPRS: 33,906]

SUB CODE: 07 / SUBM DATE: 15Dec64 / OTH REF: 007

Card 1/1   mjs

FEL'DSHTEYN, A.I.; GARZANOVA, G.V.

Variability of Gärtner's bacillus; author's abstract. Zhur.
mikrobiol.epid. i immun. 28 no.5:95-96 My '57.   (MIRA 10:7)

1. Iz bakteriologicheskoy laboratorii Saratovskoy sanitarno-
epidemiologicheskoy stantsii Stalinskogo rayona.
        (SALMONELLA ENTERITIDIS)

GARZICIC,B.; ANAF,M.

Differentiation of white rat embyronic thyroid in vitro on a
medium without pituitary hormones. Acta med. iugosl. 13 no.4:
409-423 '59.

1. Onkoloski institut i Bioloski institut Medicinskog fakulteta
u Beogradn.
(THYROID GLAND embryol.)

GARZICIC, B.; ZIVKOVIC, S.

Changes in some aspects of cells inoculated into experimental
animals and returned to in vitro conditions. Acta med. Iugosl.
19 no.1:15-28 '65.

GARZO, Bela, okleveles kohomernok

Guidlines for designing automated both foundries. Kon lap 97 no.12: Suppl:Ontode 15 no.12:277-283 D '64.

1. Designing Offices, Ministry of Metallurgy and Machine Industry, Budapest.

LENGYEL, Bela, prof., dr. (Budapest, VIII., Muzeum korut 6-8);
     GARZO, Gabriella (Mrs) (Budapest, VIII., Muzeum korut 6-8);
SZEKELY, Tamas (Budapest, VIII., Muzeum korut 6-8)

On some problems concerning the gas chromatographic analysis
of methylchlorosilanes. Acta chimica Hung 37 no.1:37-51 '63.

1. Institute of General and Inorganic Chemistry, Lorand Eotvos
University, Budapest. 2. Editorial board member, "Acta Chimica
Academiae Scientiarum Hungaricae" (for Lengyel).

CSAKVARI, Bela (Budapest, VIII., Muzeum korut 6-8); GARZO, Gabriella
        (Budapest, VIII., Muzeum korut 6-8); JENEI, Sandor (Budapest,
        VIII., Muzeum korut 6-8).

On the direct synthesis of methyl chloro silanes. Pt.2.
Acta chimica Hung 39 no.1:33-37 '63.

1. Institute of General and Inorganic Chemistry, L. Eotvos
University, Budapest; Research Group for Inorganic Chemistry
of the Academy of Sciences, Budapest.